

IMPOUNDMENT 2 LINER INSTALLATION AND INSPECTION

DRAFT



American Cyanamid Superfund Site 20 Polhemus Lane Bridgewater, NJ



213982.09 Wyeth Holdings Corp August 21, 2012



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#### 1. INTRODUCTION

This report presents the results of work to temporarily stabilize material in Impoundment 2 at the American Cyanamid Superfund Site (site). This work was prompted by conditions following regional flooding in August 2011. At that time minor amounts of material in Impoundment 2 was dislodged and migrated to the top of and outside of the berm that currently surrounds Impoundment 2 and adjacent Impoundment 1.

#### 1.1 BACKGROUND

Impoundments 1 and 2 are located in the southeastern portion of the site within the flood plain of the Raritan River. The impoundments are surrounded by a 6-foot high chain-link fence and a berm that rises approximately 10 feet above the surrounding floodplain. Both impoundments have approximately 1- to 3-foot deep water caps. Impoundments 1 and 2 are separated by a north-south trending berm that is approximately 15 feet wide. Impoundment 2 measures approximately 330 feet north to south by 290 feet east to west. The material in Impoundment 1 below the water cap is covered. Prior to this project, there was no cover between the water cap and the material in Impoundment 2. This project involved installation of a cover between the material in Impoundment 2 and the water cap.

Proposals for this project were received from six qualified environmental construction contractors. The contract for temporary stabilization of the surface of the material in Impoundment 2 below the water cap was awarded to Creamer Environmental Inc. (CEI) of Hackensack, New Jersey, as a design-build project. The scope of work involved covering the surface of the material in the impoundment with a geotextile cover.

This report identifies the organizations involved in the project, documents the installation process from the time of award to completion of construction, provides guidelines for future sampling through the cover and identifies procedures for periodic inspections of the cover. Appendix A contains information on the cover material installed. Photographs showing construction activities are presented in Appendix B. Appendix C contains a form and diagram for use during cover inspections.

#### 1.2 ORGANIZATIONS

The following organizations provided services and/or materials during this project:

- CEI, Hackensack, New Jersey, performed the construction.
- Woodard & Curran (W&C), East Windsor, New Jersey, provided Contract management, engineering support, field observation, and documentation.
- Cherry Weber, Freehold, New Jersey, provided additional engineering support including review of system design and installation methods.
- National Fence Systems, Inc., Avenel, New Jersey, provided labor and materials to remove and replace the chain-link fence surrounding Impoundment 2.
- Stavola Companies, Tinton Falls, New Jersey, provided stone used to anchor the cover.



• Aamik Crane Service, Quakertown, Pennsylvania, provided support during delivery of cover material.



#### 2. COVER INSTALLATION

#### 2.1 OVERVIEW

The original scope of work included installation of the cover in nine 45-foot wide by 290-foot long panels oriented west to east with 4-foot wide overlaps between each panel. The perimeter of the cover was to be secured in a 1-foot wide by 1 ½-foot deep anchor trench and ballast chains were proposed to hold the zero buoyancy cover in place below the water cap of Impoundment 2. Modifications to the panels and perimeter anchoring system were required due to changed field conditions discussed later in this report.

The following general procedures were used to install each panel:

- 1. Each 45-foot wide panel was received in a folded roll.
- 2. The panel was placed in the staging area and unfolded.
- 3. A buoyant polyvinyl chloride (PVC) pipe was secured to the leading edge of the cover panel and a cable was attached.
- 4. Personnel and a mechanical excavator positioned on the opposite side of the impoundment used the cable to pull the cover across the top of the impoundment water cap.
- 5. Bags filled with gravel were placed temporarily on the edges of the panel outside of the water cap to secure the panel in position.
- 6. Ballast chains were placed on top of the buoyancy-neutral floating cover to sink it into place.
- 7. At a minimum, ballast chains were placed along on the center line of each panel and along the 4-foot wide overlap between panels.
- 8. Additional ballast chains and bags containing stone were used when necessary to control the sinking procedure.

#### 2.2 COVER INSTALLATION

Work was performed by CEI in accordance with their proposal dated November 11, 2011. The contract was awarded on December 13, 2011. At that time CEI ordered the fabricated cover materials, Huesker Comtrac® P 45/45 woven polypropylene high strength geotextile (see Appendix A). This material was selected based on its compatibility with organic compounds and low pH associated with the material in the impoundment. Delivery of the material was scheduled for the first week of January.

CEI met with Wyeth Holdings Corporation (WHC) and W&C at the site on Tuesday, December 19, 2011 to review project logistics. At that time construction of an elevated platform for a temporary wastewater treatment plant was underway nearby. The platform consisted of dense grade aggregate and rip-rap mound adjacent to the western side of Impoundment 2 and construction was being managed by O'Brien & Gere (OBG). Representatives of CEI, W&C, OBG and Quantum Management Group discussed coordination between the two construction projects. Based on the original design, deployment of the cover panels would require a minimum 50-foot wide work area along the west side of Impoundment 2.



Construction of the platform encroached on this work area which would necessitate close coordination between CEI and OBG.

The tentative project schedule and location of the work area was discussed during the meeting on December 19. A separate project involving sampling of Impoundment 2 had been scheduled to be completed ahead of the CEI construction project. The sampling project, performed by CH2M Hill and AquaSurvey, required clear access to the impoundment for sampling from a boat. WHC required that CH2M Hill's sampling work be completed before CEI began construction. The project team considered postponing CEI's construction work due to the uncertain schedule for CH2M Hill's sampling program. However, because CEI's construction work could not be performed when the impoundment was frozen and because weather conditions were becoming colder, CEI's schedule was not postponed and delivery of cover materials remained scheduled for the first week of January.

CEI's project superintendent inspected the site on Tuesday, January 3 and reviewed the final schedule. CH2M Hill's sampling schedule had not been finalized by this time but efforts were underway to complete their work promptly.

On Thursday, January 5, 2012 CEI began mobilization activities. CEI was onsite on this date to receive delivery of construction materials.

On Friday, January 6, 2012, CEI began work on the temporary staging area and took delivery of the cover material.

CEI continued work on the staging area and had scheduled removal of the fence to begin on Monday, January 9. However, as of this date CH2M Hill still had not completed their sampling effort. Therefore, scheduled CEI construction work was temporarily halted.

On Tuesday, January 10, an approximately 1-inch thick layer of ice had formed on Impoundment 2. Although CH2M Hill believed that they would complete their sampling the following day, the ice on the pond would prevent deployment of the cover panels. WHC, W&C and CEI agreed that the construction phase should be halted until the ice melted. CEI was instructed to relocate and secure their materials until favorable weather conditions would allow construction to proceed. Later in the week WHC advised W&C and CEI that USEPA requested that the impoundment cover construction work be expedited. CEI and W&C reviewed alternatives for construction but concluded that the panels could not be deployed when the impoundment was covered with ice because the panels would not sink below the water cap and could not be secured properly. Unless there was a break in the weather construction would have to be postponed until the spring thaw.

Ambient temperatures rose during the last week of January and ice covering Impoundment 2 had melted by Thursday, January 26, 2012. CEI inspected the site the following day and agreed that as long as the weather remained favorable they could attempt to proceed with construction. However, at that time CEI observed that several 20,000-gallon frac tanks associated with construction of the wastewater treatment plant had been placed in the planned cover deployment area west of the impoundment. OBG reported that the tanks could not be relocated. A revised deployment method was required because the area to the west of Impoundment 2 was no longer accessible for deployment of the cover.

During the following week CEI and W&C reviewed various alternatives for deployment of the panels. The approach found to be most feasible involved refabricating the panels so that they could be deployed from north to south instead of east to west. This approach required seven 335-foot long panels rather than



the nine 290-foot panels previously fabricated. On February 10, the nine panels were returned to the manufacturer where two of the panels were cut up into 45-foot sections and spliced onto the other seven panels. The splicing process involved secure sewing of the geotextile panels at the manufacturer to ensure that the panels would not tear during installation and that the seams would provide the same or greater tear resistance as the rest of the panel.

On February 23, 2012, the reconfigured panels were returned to the site and CEI resumed construction activities. Initial work involved establishing a staging and deployment area on the north side of Impoundment 2 and removal of the chain-link fence. Also on this date CEI determined that the water level within the impoundment had risen considerably. The high water level prevented construction of the anchor trench so two alternative approaches were evaluated. The first alternative involved pumping down the water cap approximately 1 foot and allowing the soil to dry before excavating. The second alternative was to use rip-rap in lieu of the anchor trench. An engineering evaluation found both approaches to be equally effective. Therefore, because lowering the water level in the impoundment would result in further delays to the project the rip-rap anchor system alternative was selected.

Site preparation continued on February 24, including removal of the fence and establishment of the work areas. Plastic construction fencing was used to temporarily secure the perimeter areas from which the chain-link fence had been removed.

On Monday, February 27, CEI cleared and grubbed the sides of Impoundment 2 and regraded the deployment and staging areas on the north side of Impoundment 2. Brush and other materials removed were placed into an ETGI roll-off dumpster provided by WHC.

On Tuesday, February 28, CEI completed clearing, grubbing and grading work and prepared the first panel for deployment at the northeastern corner of the work area.

On Wednesday, February 29, CEI deployed the first panel across the eastern edge of Impoundment 2. Ballast chains were placed however the cover did not sink as rapidly as expected and was therefore allowed to sink overnight.

On the morning of March 1, CEI deployed additional ballast chains and stone bags sink the first panel. It appeared that air trapped by the cover may have temporarily increased its buoyancy. Once the first panel had been sunk CEI deployed the second panel. The second panel overlapped approximately 4 to 5 feet along the west side of the first panel.

On Friday, March 2 CEI deployed additional chains to sink the second panel and positioned the third panel for deployment.

On Sunday, March 4, CEI deployed the third panel and prepared the fourth panel.

On Monday, March 5, CEI placed additional ballast chains to sink the third panel. Strong winds prevented safe deployment of the fourth panel on this day.

On Tuesday, March 6, CEI deployed and sank the fourth panel, deployed the fifth panel and rigged the sixth panel for deployment.

On Wednesday, March 7, CEI placed additional ballast chains to sink the fifth panel, deployed and sank the sixth panel and deployed the seventh and final panel.



On Thursday, March 8, CEI placed additional ballast chains to sink the seventh panel. Ballast chains were arranged east to west and north to south. At this point, all panels were installed and the project was considered substantially complete.

Between Friday, March 9 and Tuesday March 13, CEI installed 6- to 12-inch rip-rap to secure the perimeter of the cover.

On Wednesday, March 14 through Friday March 16, CEI placed ¾-inch stone on top of the rip-rap to provide safer footing and National Fence installed the replacement chain-link fence along areas where work was complete. Caution tape was placed across the areas where fence installation was pending as a temporary control measure.

Fence installation and demobilization activities were completed on Monday, March 19, 2012.



#### 3. IMPOUNDMENT MATERIAL SAMPLING

Future site activities may entail collection of impoundment material samples from below the cover. Such sampling will require the cover to be breached. The following procedures should be implemented to minimize impacts from cover breaches.

- 1. An opening of no more than 1 foot by 1 foot should be cut into the cover using a knife attached to a pole. Do not attempt to penetrate the woven cover without first cutting out a section as this may cause unintended tearing and/or movement of the cover panels. Avoid cutting and sampling near the edges of the cover panels.
- 2. The cut cover fabric should be retrieved and inspected to verify the size and shape of the opening.
- 3. The removed fabric should be managed as potentially contaminated solid waste.
- 4. A new piece of fabric measuring at least 5 feet by 5 feet should be cut to patch the breach.
- 5. The patch should be floated on the surface of the impoundment directly over the penetration in the cover.
- 6. Ballast chains and/or bags of gravel should be placed along the edges of the patch to sink and secure the patch over the penetration.
- 7. The patch should be centered over the penetration. Rods may be used to guide the patch as it sinks so that it remains centered with an approximately 2-foot overlap on each side of the sampling penetration.
- 8. A bag containing sand, gravel or bentonite should be placed on the center of the patch directly over the penetration.

Locations of patches should be documented and observed during regular inspections of the cover (see Section 4).



#### 4. COVER INSPECTIONS

The Impoundment 2 cover should be inspected annually and as soon as practicable following any flooding event that overtops the berm surrounding the impoundment. It is recommended that the annual inspection be performed during the second quarter of each calendar year to allow for prompt repairs to damage that may result from winter ice or spring thaw. Appendix C presents an inspection form.

Inspections will consist of two parts: 1) inspection from land to observe overall conditions for safety and the edges of the impoundment and 2) Inspection from a boat to observe cover ballast, overlaps and patches. Before performing the inspection the inspectors should review the results of previous inspections and be aware of any previous repairs and/or patches. Ensure these areas are observed during the current cover inspection.

A minimum of two people is required for the inspection from land. A minimum of three people is required for the inspection from a boat. Note that there are several hazards to be considered before entering the impoundment area. A careful review of the project health and safety requirements shall be completed prior to each inspection. Tailgate safety briefings must include the following potential hazards:

- Slip, trip and fall;
- Work near open water, and;
- Presence of and potential for exposure to high concentrations of organic compounds and very low pH (acidic) conditions in the material within the impoundment.

#### 4.1 INSPECTION FROM LAND

#### 4.1.1 Exterior Fence Inspection

Initially walk around the outside of the perimeter fence and note the following:

- 1. General conditions including the fence, evidence of stability and/or failure of the berm. (Refer to the project Flood Management and Response Plan for specific inspection procedures to be implemented after a flood event.).
- 2. Evidence of gas generation (e.g. bubbles forming on the surface of the impoundment water cap). If evidence of gas generation is observed immediately notify the project manager and leave the area. Do not reenter the area for the inspection until the atmosphere has been confirmed to be safe.
- 3. Presence or absence of breaches or other conditions that may indicate a failure of the cover.
- 4. Condition of stone along the inside perimeter of Impoundment 2. Stone rip-rap was used to secure the edges of the cover. The rip-rap was partially covered with ¾ inch stone to improve the surface. Note the general condition of the stone and evidence of instability, if any, which might be unsafe to walk upon.



- 5. Evidence of disturbance by wildlife such as burrows.
- 6. Overall condition of the perimeter fence including damage and/or gaps.

#### 4.1.2 Interior Fence Inspection

If safe to do so enter through the access gate near the northeast corner of Impoundment 2. The interior fence inspection shall be performed by a two-person team. Proceed in a clockwise direction around the edge of the impoundment and note the following:

- 1. Exposed areas of cover
- 2. Evidence of tears and/or stress on the cover material near the contact with the rip-rap
- 3. Locations of ballast chains. Note visible changes from the previous inspection.
- 4. Conditions of patches, if any located near the edge of the impoundment, including the presence of ballast chain and central weighted bag (see Section 3 for patching of the cover after sampling of impoundment material).
- 5. Locations and conditions of previous repairs.
- 6. Approximate minimum distance between the water cap and the fence along the north south and west sides of the impoundment.
- 7. Approximate minimum distance between the water cap and the top of the berm between Impoundments 1 and 2.

#### 4.2 INSPECTION FROM BOAT

A row boat should be used to inspect the portions of the cover beneath the water cap away from the edges of the impoundment. A three-person team is required for the inspection from the boat. The team will include two individuals aboard the boat (one to maneuver the boat and one to inspect) and a spotter on land.

- 1. Proceed along each of the cover panels in a north to south/south to north pattern. Inspectors should observe each of the 13 north-south oriented ballast chains located at the center of the seven panels and along the six overlaps.
- 2. Note gaps, if any, that may be visible between panels
- 3. Observe the conditions of patches, if any, including the presence of a ballast chain near the edge of the patch and the presence of a weighted bag near the center of the patch.

#### 4.3 INSPECTION REPORTING

Appendix C includes a form and diagram to be used during cover inspections. A copy of the completed inspection form, along with identification of any areas that require attention, should be provided to the site manager and WHC by the next business day.



# **APPENDIX A: COVER MATERIAL INFORMATION**

OREGON: Portland 503-771-5115 | Medford 541-608-1648 WASHINGTON: Woodinville 425-415-6115 | Fife 253-922-6641 UTAH: Salt Lake City 801-521-5141

# COMTRAC® P 45/45

#### HIGH STRENGTH GEOTEXTILE

Comtrac P 45/45 high strength geotextile fabric is comprised of high tenacity polypropylene yarns which are woven into a stable network such that the yarns retain their relative positions. The fabric is inert to biological degradation and naturally encountered chemicals, alkalies, and acids. Comtrac P 45/45 high strength geotextile conforms to the minimum average roll values listed in the following table.

#### PHYSICAL PROPERTIES OF COMTRAC P 45/45

		MA	_MARV <sup>1</sup> _			
PROPERTY	TEST	ENGLISH units	SI units			
		MD x CMD	MD x CMD			
Ultimate Tensile Strength	ASTM D-4595	280 x 270 lb/in	49 x 47 kN/m			
Tensile Strength @ 2%	ASTM D-4545	31 x 62 lb/in	5.5 x 11 kN/m			
Tensile Strength @ 5%	ASTM D-4595	97 x 142 lb/in	17 x 25 kN/m			
Long Term Design Strength	GRI GT7	60 x 55 lb/in	10.5 x 9.6 kN/m			
Factory Seam Strength	ASTM D-4884	115 lb/in	20 kN/m			
Mass Per Unit Area	ASTM D-5261	7 oz/yd²	240 g/m <sup>2</sup>			
Grab Tensile Strength	ASTM D-4632	360 x 300 lb	1.6 x 1.3 kN			
Grab Tensile Elongation	ASTM D-4632	15% x 10%	15% x 10%			
Apparent Opening Size	ASTM D-4751	30 US Sieve	0.6 mm			
Permittivity	ASTM D-4491	0.4 sec <sup>-1</sup>	0.4 sec <sup>-1</sup>			
Burst Strength	ASTM D-3786	700 psi	4820 kPa			
Flow Rate	ASTM D-4491	30 gal/min/ft <sup>2</sup>	810 l/min/m <sup>2</sup>			
Puncture Strength	ASTM D-4833	158 lb	0.7 kN			
Trapezoidal Tear Strength	ASTM D-4533	225 lb	1.0 x 1.0 kN/m			
UV Resistance (500 HRS)	ASTM D-4355	80%	80%			

1 Minimum average roll values are based on a 95% confidence level.

MD-Machine Direction CMD-Cross Machine Direction

Standard Roll Size: 5.2 m (CMD) x 100 m (MD)=520 m<sup>2</sup>/Roll 17.06 ft (CMD) x 328.1 ft (MD)=622 yd<sup>2</sup>/Roll

Each roll of Comtrac delivered to the project site is labeled by Huesker<sup>®</sup> with a roll label that indicates manufacturer's name, product identification, lot number, roll number and roll dimensions. All rolls of Comtrac are encased in a sturdy polyethylene wrap to shield the product from rain, dirt, dust and ultraviolet light. Contact Huesker for information on our material warranty.





**APPENDIX B: PHOTOGRAPHS** 



Photograph 1: February 27, 2012 – View of Impoundment 2 from southeast corner before installation of cover.



Photograph 2: February 27, 2012 – Temporary construction fencing used to secure area during construction.



Photograph 3: February 27, 2012 – Preparing staging area north of Impoundment 2





Photograph 5: February 29, 2012 – Deployment of first panel along eastern edge of Impoundment 2. Impoundment 1 is visible to the left.



Photograph 6: March 1, 2012: Deployment of second panel from north side of Impoundment 2.



Photograph 7: March 2, 2012 – Placing ballast chains and stone bags used to sink second panel.



Photograph 8: March 4, 2012 – Attaching third panel to cables for deployment.



Photograph 9: March 5, 2012 – Third panel in place after installation of ballast chains





Photograph 11: March 9, 2012 – Placement of rip-rap to anchor perimeter of panels following deployment of all seven panels.



Photograph 12: March 14, 2012 – Placement of ¾-inch stone



Photograph 13: March 14, 2012 – Impoundment 2 after installation of cover and rip-rap anchor



Photograph 14: March 19, 2012 – Restoration of perimeter fence



# APPENDIX C: COVER INSPECTION FORM

### Impoundment 2 Cover Inspection Form

Inspection Date: Weather Conditions:											
Inspection Team:											
Date of last inspection: (field team should have a copy of the last inspection form for reference)											
Exterior Fence	Evidence of Berm	Evidence of Gas	Evidence of	Evidence of Debris	Evidence of						
Inspection	,	Generation (Bubbles	Breach or Cover	or Unsafe Area	Disturbance by	Evidence of Fence					
Observations	Failure?	on water cap)?	Failure?	Inside Fence?	Wildlife?	Damage?					
North side	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No					
West side	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No	☐ Yes / ☐ No ☐ Yes / ☐ No					
South side         □ Yes / □ No         □ Yes / □ No </td											
Exterior Fence Inspection Comments (provide details for any "Yes" answers above).  Check here if additional sheets are attached.											
Interior Fence			Evidence of Tears	Number of Stressed and/or	Ballast Chain Locations Different	Approx. Min.					
Inspection	Exposed Area of	Number of Exposed	and/or Stress on	Torn Areas	from Last	Distance from Water					
Observations	Cover?	Areas Visible?	Cover?	Visible?	Inspection?	Cap to Fence/berm					
North side	☐ Yes / ☐ No		☐ Yes / ☐ No		☐ Yes / ☐ No	feet					
East side	☐ Yes / ☐ No		☐ Yes / ☐ No		☐ Yes / ☐ No	feet					
South side	☐ Yes / ☐ No		☐ Yes / ☐ No		☐ Yes / ☐ No	feet					
West side	☐ Yes / ☐ No		☐ Yes / ☐ No		☐ Yes / ☐ No	feet					
Interior Fence ilispection	Interior Fence Inspection Comments (provide details for any "Yes" answers above). Check here if additional sheets are attached.										
۹		E i Dist from north		Est. Dist. from		Est. Dist. from north					
	Rallast Chain	Est. Dist. from north side of Impoundment		north side of		side of Impoundment					
Inspection From Boat	Ballast Chain Disturbed?	Est. Dist. from north side of Impoundment to Disturbed Chain	Patches Present?		Patches Require Repairs?						
<u> </u>	Disturbed?	side of Impoundment to Disturbed Chain		north side of Impoundment to Patch	Patches Require Repairs?	side of Impoundment to Area Requiring Repair					
Panel 1	Disturbed?  ☐ Yes / ☐ No	side of Impoundment to Disturbed Chain feet	☐ Yes / ☐ No	north side of Impoundment to Patch feet	Patches Require Repairs?  ☐ Yes / ☐ No	side of Impoundment to Area Requiring Repair feet					
Panel 1 Overlap 1/2	Disturbed?  ☐ Yes / ☐ No ☐ Yes / ☐ No	side of Impoundment to Disturbed Chain feet feet	☐ Yes / ☐ No☐ Yes / ☐ No☐	north side of Impoundment to Patch feet feet	Patches Require Repairs?  Yes /  No Yes /  No	side of Impoundment to Area Requiring Repair feet					
Panel 1 Overlap 1/2 Panel 2	Disturbed?  Yes / No Yes / No Yes / No	side of Impoundment to Disturbed Chain feet feet feet	☐ Yes / ☐ No ☐ Yes / ☐ No ☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet	Patches Require Repairs?  Yes / No Yes / No Yes / No	side of Impoundment to Area Requiring Repair feet feet					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain feet feet feet feet	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet	Patches Require Repairs?  Yes / No Yes / No Yes / No Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5 Panel 5	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5 Panel 5 Overlap 5/6	Disturbed?  Yes / No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5 Panel 5 Overlap 5/6 Panel 6	Disturbed?  ☐ Yes / ☐ No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5 Panel 5 Overlap 5/6 Panel 6 Overlap 6/7	Disturbed?    Yes /   No     Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No   Yes /   No       Yes /   No       Yes /   No       Yes /   No	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5 Panel 5 Overlap 5/6 Panel 6 Overlap 6/7 Panel 7	Disturbed?	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					
Panel 1 Overlap 1/2 Panel 2 Overlap 2/3 Panel 3 Overlap 3/4 Panel 4 Overlap 4/5 Panel 5 Overlap 5/6 Panel 6 Overlap 6/7	Disturbed?	side of Impoundment to Disturbed Chain  feet feet feet feet feet feet feet fe	☐ Yes / ☐ No	north side of Impoundment to Patch  feet feet feet feet feet feet feet fe	Patches Require Repairs?  Yes / No	side of Impoundment to Area Requiring Repair  feet feet feet feet feet feet feet fe					



## Impoundment 2 Inspection Diagram

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= ==== = === = === = == = == = == = = == =	Panel 7	Overlap 6/7	1.6	<u>ъ 5/6</u>				3/4		2/3				Berm
	Pa	Ove	Panel 6	Overlap 5/6	Panel 5	dis Overlap 4/5	Panel 4	Overlap 3/4	Panel 3	Overlap 2/3	Panel 2	Overlap 1/2	Panel 1	
" 						Rip-	rap							